KATHMANDU UNIVERSITY
End Semester Examination
February/March, 2019

Mark Scored:

Level : B. Tech.
Year : II

Course : ENVE 209
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No. :

Date 08 MAR 2019

SECTION "A"
[10 Q × 0.5 = 5 marks]

Tick (√) the appropriate answer.

1. The Traverse survey that starts at known point but ends at unknown point is called.....traverse.
   a. closed b. link c. open d. closed

2. .....are the primary division of surveying.
   a. Plane and geodetic surveying b. Plane and topographic
   c. Topographic and cadastral d. Plane and cadastral

3. In chain surveying only..... measurement is made.
   a. vertical b. linear c. angular d. angular and vertical

4. In plane surveying, ...
   a. the curvature of earth is taken into account
   b. the angles formed by two straight lines are plane angles
   c. the line connecting any two points on the earth surface are treated as straight lines
   d. local attraction occurs

5. The True length between two points
   a. Same as that obtained from taping b. Never known
   c. Same as that obtained from theodolite d. Same as that obtained from EDM

6. Closed contours, with higher value inwards, represent a
   a. Depression b. Hills c. Plain surface d. none of above

7. Area of a geometric figure
   a. Can be measured directly in the field
   b. is equal to length times breadth
   c. Can be obtained only from mathematics
   d. Exists only if it has volume

8. One square foot is equal to
   a. 0.209 sq.m b. 0.0929 sq.m c. 0.9209 sq.m d. 0.009209 sq.m

9. Working from whole to parts is
   a. only convention of surveying b. methodology of surveying
   c. principle of surveying d. not always necessary to follow

10. Which of the following is systematic error in tape survey?
    a. Sag
    b. Inexperience of surveyor
    c. Wind
    d. Local Attraction

SECTION "B"

[5 Q. × 1 = 5 marks]

Fill in the blank with appropriate answer.

11. Kathmandu Terai Fast track road is nearly 100 km long. Assuming a right of way of 50 m, how much land area needs to be acquired? Provide your answers in hectare.....

12. The significant figures for 75.200 is..... and significant figures for 0.002535 is.....

13. The full form of GPS is ..... and use to identify the..... of any point on earth.

14. Abney level and wooden peg are used to determine ..... and ..... respectively.

15. The ..... is an imaginary point directly "above" a particular location and ....., is an imaginary point directly "below" a particular location on the imaginary celestial sphere.

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Level : B. Tech.
Year : II
Time : 2 hrs. 30 mins.

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Semester : I
F. M. : 40

SECTION"C"

Attempt *ALL* questions. Assume necessary data if required.

1. a. Define Chain surveying. What are the major steps of chain surveying? Describe in brief. [1+3]
   b. What is the principle of chain surveying and explain why this principle is applied in chain surveying. [2+2]

2. a. Define GPS with its working principle? Write two application areas of GPS. [2+2]
   b. Define Map and list out different types of map that are used in environmental engineering field. What are the major information you obtain from a topographic map? [2+2]

3. a. Draw the contour lines for the following with proper label. [3]
      i. Valley ii. Ridge iii. Over hanging cliff
   b. Explain three major factors that effects the field work. [3]
   c. Define the following terms [2]
      i. Contour interval ii. Topographic surveying

OR

Define geodetic surveying. Explain three different types of environmental monitoring. A 20 m long chain was found to be 4 cm too long after chaining 1400 m. It was 8 cm too long at the end of the day's work, after chaining a total distance of 2420 m. If the chain was correct before of the work find the true distance. [2+3+3]

4. a. What is closing error? How do you overcome the closing error in any linear survey? Explain with neat sketch. [1+2]
   b. Explain all three parameters which should be considered while collecting baseline data for environmental assessment. [3]
   c. Describe Primary and secondary data source with examples [2]

5. Widening of a road section in Gorkha district is being proposed by National Reconstruction Authority to provide improved transportation services to earthquake affected area. The existing width of road is 4 m. The Authority plans to make the road 6.25m wide.

   In an environmental survey conducted on a road section of Gorkha district, the following information **(Table 1)** was observed.

   a. Draw the plan of typical topography of the road section based on the given information. [2]
   b. Fill the missing information on **Table 2** given below. [4]
   c. According to forest rules, for 1 ha loss of forest area, 1600 trees needs to be planted. For an Individual cut down of trees 25 seedlings should be planted and should grow for 5 years to minimize the adverse impact on environment. The unit cost of plantation is NRs.151.12. Based on these information fill the missing information on **Table 3**. [2]

Table 1: Land use pattern road alignment

Chainage		Type of land
From	**To**	
0+000	0+200	Build up Area
0+200	0+840	Agricultural Land
0+840	2+740	Community Forest (114 trees to be cut down)
2+740	2+880	Agricultural Land
2+880	4+380	Governmental Forest (55 trees to be cut down)
4+380	4+750	Build up Area
4+750	5+240	Barren land
5+240	6+440	Build up Area
6+440	7+040	Barren land
7+040	8+040	Community Forest (87 trees to be cut down)
8+040	9+160	Barren land
9+160	10+280	Build up Area
10+280	11+960	Community Forest (68 trees to be cut down)
11+960	12+146	Build up Area

Table 2: Land requirement detail along road alignment

Type of Land, Ownership	**Length (m)**	**Existing width (m)**	**Additional width (m)**	**Existing Area (ha)**	**Additional Area (ha)**	**Total Area (ha)**
Agricultural Land	?	4	2.25	?	?	?
Barren Land	?	4	2.25	?	?	?
Forest	?	4	2.25	?	?	?
Build up Area	?	4	2.25	?	?	?
Total	**12,146**			**?**	**?**	**?**

Table 3: Plantation plan

Name of the CF/ Govt. forest	**No. of Trees to be cut down**	**Compensatory Plantation (1:25)**	**Total Cost (NRs)**
Community Forest	?	?	?
Government forest	?	?	?
Subtotal (A)	?	?	?
For Additional Forest area loss **(B)**	-	?	?
Total	?	?	?